

WHAT IS CLAIMED IS:

1. A gas turbine comprising a compressor for
compressing air, a combustor for mixing air compressed
5 by said compressor with fuel and burning them, and a
turbine to be driven by combustion gas burned by said
combustor;

said gas turbine further comprising;

a cooling air system for supplying part of air
10 compressed by said compressor to the high temperature
section of said turbine;

a heater exchanger for exchanging heat of part of
air compressed by said compressor, said exchanger
installed on said cooling air system; and

15 a system for adjusting air temperature on the
downstream side of said heater exchanger in conformity
to the operation time of said turbine.

2. A gas turbine comprising a compressor for
20 compressing air, a combustor for mixing air compressed
by said compressor with fuel and burning them, and a
turbine to be driven by combustion gas burned by said
combustor;

said gas turbine further comprising;

25 a cooling air system for supplying part of air
compressed by said compressor to the high temperature
section of said turbine;

a heater exchanger for exchanging heat of part of
air compressed by said compressor, wherein said
exchanger installed on said cooling air system is an
indirect heater exchanger equipped with a coolant feed
5 unit for feeding coolant; and

coolant temperature adjusting means for adjusting
the temperature of said coolant of said heater
exchanger.

10 3. A gas turbine comprising a compressor for
compressing air, a combustor for mixing air compressed
by said compressor with fuel and burning them, and a
turbine to be driven by combustion gas burned by said
combustor;

15 said gas turbine further comprising;

a cooling air system for supplying part of air
compressed by said compressor to the high temperature
section of said turbine, and for supplying to the
combustor the air having cooled the high temperature
20 section of said turbine,

a heater exchanger for exchanging heat of part of
air compressed by said compressor and a coolant system
boost compressor for compressing air between said
heater exchanger and said turbine high temperature
25 section, wherein said heater exchanger and booster
compressor are installed on said cooling air system,
and

a system for adjusting air temperature on the downstream side of said heater exchanger in conformity to the operation time of said turbine.

5 4. A gas turbine according to any one of Claims 1 through 3 further characterized by comprising an auxiliary boiler or heater for overheating the coolant of said heater exchanger.

10 5. A gas turbine according to any one of Claims 1 through 3 further characterized by comprising;
 an auxiliary boiler for overheating the coolant of an evaporator wherein said heat exchanger is used as said evaporator,
15 a heater for overheating the coolant of said evaporator or
 a controller for controlling the water level for said evaporator.

20 6. A gas turbine comprising a compressor for compressing air, a combustor for mixing air compressed by said compressor with fuel and burning them, and a turbine to be driven by combustion gas burned by said combustor;
25 said gas turbine further comprising;
 a cooling air system for supplying part of air compressed by said compressor to the high temperature

section of said turbine;

a heater exchanger for exchanging heat of part of
air compressed by said compressor, said exchanger
installed on said cooling air system; and

5 a bypass system for bypassing said heater
exchanger.

7. A high temperature section cooling method of a
gas turbine comprising a compressor for compressing
10 air, a combustor for mixing air compressed by said
compressor with fuel and burning them, and a turbine
to be driven by combustion gas burned by said
combustor;

said high temperature section cooling method
15 comprising the steps of:

cooling part of air compressed by said compressor
by said heat exchanger and supplying it to the high
temperature section of said turbine, and

adjusting said air temperature at a desired time
20 during the operation of said turbine in order to avoid
overheating of air on the downstream side of said
heater exchanger.

8. A high temperature section cooling method of a
25 gas turbine comprising a compressor for compressing
air, a combustor for mixing air compressed by said
compressor with fuel and burning them, and a turbine

to be driven by combustion gas burned by said combustor;

said gas turbine further comprising:

5 a cooling air system for cooling part of air compressed by said compressor and sending it to the high temperature section of said turbine, and

a bypass system for bypassing said heater exchanger;

10 said high temperature section cooling method further characterized by comprising a step of:

sending at least part of air to said bypass system at a desired time during the operation of said turbine, and

15 adjusting said air temperature in order to avoid overheating of air on the downstream side of said heater exchanger.